ABSTRACT

A segmentation method of a frame of image information including a plurality of spaced DNA spot images corresponding to a plurality of DNA spots. The image information includes image intensity level information corresponding to said DNA spots. The frame is stored in a memory device and a set of image information within said frame including a selected set of the DNA spot images is selected. A grid including a plurality of spaced grid points corresponding to said selected DNA spot images is generated, such that each grid point includes position information indicating the position of the grid point within said frame. The current position of one or more grid points are adjusted by: selecting a first bounding area in the frame around the current position of the grid point; generating a first position update including position information for updating a current position of said grid point to a first new position within the first bounding area, the location of said first new position relative to said current position being a function of intensity level of at least a portion of the image within the first bounding area; generating a second position update including position information for updating said current position to a second new position in the frame, said second new position being in a geometric arrangement with the position of grid points around said grid point; and updating said current position with the position information of the first and the second position updates, thereby shifting said grid point toward the corresponding spot image. A display method diaplays image information corresponding to a plurality of DNA spot images of at least one DNA spot, the image information including image characteristic values including background and signal intensity levels. For each DNA spot image: (1) background and signal intensity levels are extracted from the image characteristic values for the spot image, and (2) difference values between the background intensity levels and signal intensity levels are determined. For each DNA spot: (1) the corresponding difference values are related a range of graphic values, (2) a graphic value for each difference value is selected; and (3) the selected graphic values are displayed.